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10/674,669	09/30/2003	Mario Elmen Tremblay	8598MR	5011

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THE PROCTER & GAMBLE COMPANY
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EXAMINER	
ZHENG, LOIS L	
ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/674,669	TREMBLAY ET AL.	
	Examiner	Art Unit	
	LOIS ZHENG	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16 and 17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. No claim amendments are made in view of applicant's response filed 16 July 2009. Therefore, claims 16-17 are currently under examination.

The examiner would like to apologize for the confusion caused by not addressing reason for withdrawing previously indicated allowable subject matter and incorrect claim numbers in the previous Non-Final Office Action mailed 1 April 2009). The instant Office Action is made **Non-Final** to clarify examiner's positions that might have been vague in the previous Non-Final Office Action and to allow applicant a chance to reply.

Status of Previously Indicated Allowable Subject Matter

2. The indicated allowable subject matter in claims 16-17, set forth in previous Final Office Action mailed 2 January 2009, was withdrawn after further review of Buckley et al. US 6,632,347 B1(Buckley).

Buckley teaches that a porous ceramic semi-permeable separator can be used as an alternative to an ion-selective membrane(col. 16 lines 20-59). Therefore, the porous ceramic semi-permeable separator as taught by Buckley reads on the claimed non-conducting porous flow barrier, and the electrochemical apparatus containing such a porous ceramic semi-permeable separator as taught by Buckley reads on the claimed non-membrane electrolysis cell.

Rejections based on Buckley follow.

Claim Interpretation

3. Since applicant's invention includes a non-membrane electrolysis cell that further comprises a non-conducting porous flow barrier, the examiner interprets the language "non-membrane electrolysis cell" to mean an electrolysis cell that does not include an ion-selective membrane. The "non membrane electrolysis cell" as recited in claims 16-17 does not exclude other porous membranes/separator/barrier/diaphragm/spacer that is not ion-selective or ion-conducting.

4. The term "non-conducting porous flow barrier" as recited in claim 17 is interpreted to mean a porous barrier/separator/spacer/membrane/diaphragm that is not electrically conducting and/or ionically selective/conducting and is capable of restricting flow of electrolyte in an electrolysis cell.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 16 is rejected under 35 U.S.C. 102(e) as being anticipated by Buckley et al. US 6,632,347 B1(Buckley).

Buckley teaches an electrochemical apparatus comprising a concentrated salt solution tank(i.e. reservoir) that supplies concentrated salt solution to process water stream to locally form the electrolyte feed solution to the electrolyzer(Fig. 2 #20, col. 19

line 64 - col. 20 line 49). Buckley further teaches using a peristaltic pump for pumping the concentrated salt solution to the process water stream forming feed stream to the electrolyzer(col. 20 lines 41-45, Fig. 2). Buckley's electrolyzer comprise an anode, a cathode, a porous ceramic semi-permeable separator(i.e. non-conducting porous flow barrier) separating the anode and the cathode, an inlet for receiving the feed solution and an outlet for discharging effluent(col. 14 lines 34-41). The electrolyzer of Buckley further comprises a passage of feed solution adjacent to the anode and an electric current supply providing current to the electrolysis cell.

Regarding claim 16, Buckley teaches that is porous ceramic semi-permeable separator can be used as an alternative to an ion-selective membrane(col. 14 lines 34-65). Therefore, the examiner concludes that Buckley's is porous ceramic semi-permeable separator is not ion-selective membrane and an embodiment of Buckley's teaching is a non-membrane electrolysis cell as claimed(i.e. an electrolysis cell without an ion-selective membrane).

Therefore, the apparatus of Buckley is structurally the same as the halogen dioxide generating system as claimed.

In addition, the claimed halogen dioxide feed solution and the halogen dioxide salt are directed to material being worked on by the claimed apparatus, therefore, do not render the instant apparatus claims patentable. See MPEP 2115.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buckley and further in view of Kaczur et al. US 5,106,465 (Kaczur).

The teachings of Buckley are discussed in paragraph 6 above. The porous ceramic semi-permeable separator as taught by Buckley reads on the claimed non-conducting porous flow barrier. Buckley further teaches that its anode is a titanium anode(col. 14 lines 25-27).

However, Buckley does not explicitly teach that the metal anode is porous.

Kaczur also teaches an electrolytic cell for the generation of chlorine dioxide (abstract). Kaczur further teaches the use of a porous platinum coated titanium anode(col. 4 lines 41-63).

Regarding claim 17, it would have been obvious to one of ordinary skill in the art to have incorporated the porous platinum coated titanium anode of Kaczur into the electrolytic apparatus of Buckley in order to utilize the high surface contact area due to the porosity of the anode and achieve high corrosion resistance as taught by Kaczur (col. 4 lines 44-45 and 57-60).

The porous anode of Buckley in view of Kaczur comprises a plurality of porous flow passages through which at least a portion of the aqueous feed solution flows. In addition, since the direction of electricity in the electrolysis cell of Buckley travels horizontally between the anode and the cathode chamber(Fig. 2 #62,64), the inlet to the electrolysis cell locates at the bottom of the electrolysis cell and the outlet locates at the

top of the electrolysis cell, the examiner concludes that the electrolyte electrolysis cell of Buckley in view of Kaczur flows in a cross direction to the flow of electricity between the anode and cathode chambers as claimed. Buckley further teaches claimed return passage for recycling of feed as claimed (Fig. 2 # 126).

The remaining claim limitations are rejected for the same reasons as set forth in the rejection of claim 16 above.

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley US 6,306,281 B1(Kelley) and Buckley et al. US 6,632,347 B1(Buckley).

Kelley teaches an electrolytic apparatus for the generation of chlorine dioxide(abstract). The apparatus comprises an aqueous sodium chlorite feed solution(col. 2 lines 55-61), a non-membrane electrolysis cell comprising an anode, a cathode, an inlet, an outlet(Fig. 1) and a power source connected to the anode and the cathode(col. 3 lines 18-21), thereby providing current through the aqueous feed solution.

Regarding claim 16, the inlet and the gap between the anode and the cathode of Kelley reads on the claimed passage for the feed solution adjacent to the anode. The inlet in the electrolytic apparatus of Kelley is capable of receiving aqueous feed solution stream and the outlet in the apparatus of Kelly is capable of discharging halogen dioxide containing effluent as claimed.

In addition, the claimed halogen dioxide feed solution is directed to a material that is worked on by the instantly claimed apparatus. As stated in MPEP 2115, it is well settled that "[i]nclusion of material or article worked upon by a structure being claimed

does not impart patentability to the claims." *In re Young*, 75 F.2d *>996<, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

However, Kelley does not explicitly teach that the claimed means for delivering halogen dioxide salt directed to an aqueous feed solution inlet stream to locally form the aqueous halogen dioxide feed solution.

Buckley teaches an electrochemical apparatus comprising a concentrated salt solution tank(i.e. reservoir) that supplies concentrated salt solution to process water stream to locally form the electrolyte feed solution to the electrolyzer(Fig. 2 #20, col. 19 line 64 - col. 20 line 49). Buckley further teaches using a peristaltic pump for pumping the concentrated salt solution to the process water stream(col. 20 lines 41-45).

Regarding claim 16, it would have been obvious to one of ordinary skill in the art to have incorporated the electrolyte feeding mechanism of Buckley into the inlet stream of Kelley in order to monitor and control the flow of the feed solution and to maintain the concentration of the feed solution as taught by Buckley.

Therefore, the apparatus of Kelley in view of Buckley comprises the claimed means for delivering halogen dioxide salt directly into an aqueous feed solution inlet stream to locally form the aqueous feed solution as claimed. In addition, since the apparatus of Kelley in view of Buckley is structurally the same as the claimed halogen dioxide generating system, one of ordinary skill in the art would have found it obvious that the apparatus of Kelley in view of Buckley is capable of consume power at about one Watt or less as claimed.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley in view of Buckley, and further in view of Kaczur.

The teachings of Kelley in view of Buckley are discussed in paragraph 9 above. Buckley further teaches that a semi-permeable porous ceramic separator (i.e. non-conducting porous flow barrier) is placed between the anode and cathode of the electrolysis cell in order to achieve an adequate flow of solution between the anode and the cathode chambers to provide acceptable electrical resistance while being sufficiently non-permeable to prevent gross mixing of anolyte and catholyte (col. 24 lines 44-65). Buckley further teaches the claimed return passage for returning the depleted effluent back to the source(Fig. 2 # 126).

Regarding claim 17, it would have been obvious to one of ordinary skill in the art to have incorporated the porous ceramic separator (i.e. non-conducting porous flow barrier) as taught by Buckley into the electrolytic cell of Kelley in view of Buckley in order to achieve an adequate flow of solution between the anode and the cathode chambers to provide acceptable electrical resistance while being sufficiently non-permeable to prevent gross mixing of anolyte and catholyte as taught by Buckley. In addition, one of ordinary skill in the art would also have found it obvious to incorporate the return passage for depleted effluent back to feed stream as taught by Buckley into the apparatus of Kelley in view of Buckley in order to reduce operating cost and increase efficiency by recycling electrolyte.

Therefore, the porous ceramic separator in the apparatus of Kelley in view of Buckley reads on the claimed non-conducting porous flow barrier. In addition, the apparatus of Kelley in view of Buckley comprises the claimed passage.

However, Kelley in view of Buckley do not explicitly teach that the metal anode is porous.

Kaczur also teaches an electrolytic cell for the generation of chlorine dioxide (abstract). Kaczur further teaches the use of a porous platinum coated titanium anode(col. 4 lines 41-63).

Regarding claim 17, it would have been obvious to one of ordinary skill in the art to have incorporated the porous platinum coated titanium anode of Kaczur into the electrolytic apparatus of Kelley in view of Buckley in order to utilize the high surface contact area due to the porosity of the anode and achieve high corrosion resistance as taught by Kaczur (col. 4 lines 44-45 and 57-60).

In addition, the porous anode of Kelly in view of Buckley and Kaczur is capable of allow at least a portion of the aqueous feed solution flows in a cross direction to a flow of electricity between the anode and the cathode as claimed. Furthermore, the porous ceramic separator as taught by Kelly in view of Buckley and Kaczur is non-conductive and is capable of restricting flow of the electrolyte solution in a cross direction to the flow of electricity between the anode and the cathode as claimed.

Response to Arguments

11. Applicant's arguments filed 16 July 2009 have been considered but they are not persuasive.

In the remarks, applicant argues that Buckley teaches an electrolysis cell that employs a membrane.

The examiner does not find applicant's argument convincing because Buckley also teaches using a porous ceramic semi-permeable separator as an alternative to an ion-selective membrane. See paragraphs 2, 6 and 8 above. Therefore, Buckley teaches a non-membrane electrolysis cell.

Applicant further argues that Kelley does not teach claimed means for locally delivering halogen dioxide salt directly to an aqueous feed solution inlet stream.
The examiner does not find applicant's argument convincing because the applicant is attacking the Kelley reference individually while the rejection ground is based on combined teaching of Kelley in view of Buckley, wherein the electrolyte feeding mechanism of Buckley is incorporated into the inlet stream of Kelley in order to monitor and control the flow of the feed solution and to maintain the concentration of the feed solution as taught by Buckley. See MPEP 2145 (IV).

Applicant further argues that Kelley and Buckley teaches away from each other because Kelley uses a non-membrane electrolysis cell and Buckley uses a membrane electrolysis cell.

The examiner does not find applicant's argument convincing because Buckley also teaches a non-membrane electrolysis cell. See paragraphs 2, 6 and 8 above.

Applicant further argues that Kaczur cannot be combined with Kelley and Buckley because Kaczur teaches an electrolysis cell that uses a membrane.

The examiner does not find applicant's argument persuasive because Kaczur is incorporated into Kelley in view of Buckley for its teaching of a porous metal anode, not for its teaching of membrane. Kaczur teaches using a porous platinum coated titanium anode, which provides high surface contact area due to the porosity of the anode and its ability to achieve high corrosion resistance(col. 4 lines 44-45 and 57-60). Such a porous anode would have been beneficial to all electrolysis cells regardless whether or not an ion-selective membrane is used.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art Unit 1793

LLZ